

Notice of Allowability

Application No.

10/827,264

Examiner

Erica E. Cadugan

Applicant(s)

LU, YUNG-HSIANG

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3722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to dkt MR 957-1477 filed 4/20/04 and interview of 11/3/05.
2. ☒ The allowed claim(s) is/are 1-7.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Morton Rosenberg on November 3, 2005.

The application has been amended as follows:

Claim 1 (Currently Amended). A twin disk type tool turret mechanism of a machine, comprising:

an internal tool turret for holding a plurality of tools thereon;

an external tool turret for holding a plurality of tools thereon;

an external toothed ring securely connected to the internal tool turret; the external toothed ring having a gear fitted thereto;

a central shaft securely connected to the external tool turret; the central shaft having a gear fitted thereto;

a power switching member capable of providing power to the internal and the external tool turrets through the external toothed ring and the central shaft respectively;

the power switching member including;

(1) a power source, which is either a servomotor or a stepper motor, and which has a bevel gear secured on an power output shaft thereof;

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(2) a [movable] rotary sleeve engaging the bevel gear of the power source at a bevel gear thereof; the [movable] rotary sleeve having a plurality of engaging teeth on a middle section thereof;

(3) a transmission shaft passed into the [movable] rotary sleeve and capable of being disengageably engaged with the engaging teeth of the [movable] rotary sleeve at engaging teeth thereof for power to be passed on to [it] the transmission shaft through the [movable] rotary sleeve; the transmission shaft having a pinion fitted to one end thereof[, and] engaged with the gear of the external toothed ring such that the internal tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission shaft is engaged with the [movable] rotary sleeve; and

(4) a transmission sleeve passed into the [movable] rotary sleeve and capable of being disengageably engaged with the engaging teeth of the [movable] rotary sleeve at engaging teeth thereof for power to be passed on to [it] the transmission sleeve through the [movable] rotary sleeve; the transmission sleeve having a gear fitted to one end thereof[, and] engaged with the gear of the central shaft such that the external tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission sleeve is engaged with the [movable] rotary sleeve;

the transmission shaft having a transmission shaft piston secured thereon, which is actuated[, and] displaced by means of power provided thereto through passage conduits, such that the transmission shaft[, and] the transmission sleeve will be displaced to change between the respective engaging positions and the respective disengaging positions thereof when the transmission shaft piston is displaced with power provided thereto through the passage conduits.

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Claim 2 (Currently Amended). A twin disk type tool turret mechanism of a machine, comprising:

an internal tool turret for holding a plurality of tools thereon;

an external tool turret for holding a plurality of tools thereon; the internal and the external tool turrets being fitted together;

an external toothed ring securely connected to the internal tool turret;

a central shaft securely connected to the external tool turret; the central shaft having a [large] central shaft piston fitted thereto;

a power switching member capable of providing power to the internal and the external tool turrets through the external toothed ring and the central shaft respectively;

a clutch including an external ring clutch claw[,] and an internal ring clutch claw respectively securely connected to an inner edge of the internal turret[,] and an inner edge of the external turret; the external and the internal ring clutch claws being capable of rotating, and being engaged with each other at convexities and concavities formed thereon; the clutch having a fixed clutch claw, which is disposed on a fixing ring;

whereby when the [large] central shaft piston is actuated[,] and displaced, the external turret will be forced to change position, and the internal and the external turrets will be left and right displaced simultaneously between a first position, in which they engage the clutch, and a second position, in which they disengage the clutch.

Claim 3 (Currently Amended). A twin disk type tool turret mechanism of a machine, comprising:

an internal tool turret for holding a plurality of tools thereon;

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an external tool turret for holding a plurality of tools thereon; the internal and external tool turrets being fitted together;

an external toothed ring securely connected to the internal tool turret; the external toothed ring having a gear fitted thereto;

a central shaft securely connected to the external tool turret; the central shaft having a gear and a [large] central shaft piston fitted thereto;

a clutch; and

a power switching member capable of providing power to the internal and the external tool turrets through the external toothed ring and the central shaft respectively;

the power switching member including;

(1) a power source, which is either a servomotor or a stepper motor, and which has a bevel gear secured on an power output shaft thereof;

(2) a [movable] rotary sleeve engaging the bevel gear of the power source at a bevel gear thereof; the [movable] rotary sleeve having a plurality of engaging teeth on a middle section thereof;

(3) a transmission shaft passed into the [movable] rotary sleeve and capable of being disengageably engaged with the engaging teeth of the [movable] rotary sleeve at engaging teeth thereof for power to be passed on to [it] the transmission shaft through the [movable] rotary sleeve; the transmission shaft having a pinion fitted to one end thereof[, and] engaged with the gear of the external toothed ring such that the internal tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission shaft is engaged with the [movable] rotary sleeve; and

(4) a transmission sleeve passed into the [movable] rotary sleeve and capable of being disengageably engaged with the engaging teeth of the [movable] rotary sleeve at engaging teeth thereof for power to be passed on to [it] the transmission sleeve through the [movable] rotary sleeve; the transmission sleeve having a gear fitted to one end thereof[, and] engaged with the gear of the central shaft such that the external tool turret will be made to rotate for allowing a tool choosing action by the power source when the transmission sleeve is engaged with the [movable] rotary sleeve;

the transmission shaft having a transmission shaft piston secured thereon, which is actuated[, and] displaced by means of power provided thereto through passage conduits, such that the transmission shaft[, and] the transmission sleeve will be displaced to change between the respective engaging positions and the respective disengaging positions thereof when the transmission shaft piston is displaced with power provided thereto through the passage conduits;

the clutch including an external ring clutch claw[, and] an internal ring clutch claw respectively securely connected to an inner edge of the internal turret[, and] an inner edge of the external turret; the external and the internal ring clutch claws being capable of rotating, and being engaged with each other at convexities and concavities formed thereon; the clutch having a fixed clutch claw, which is disposed on a fixing ring, such that when the [large] central shaft piston is actuated[, and] displaced, the external turret will be forced to change position, and the internal and the external turrets will be left and right displaced simultaneously between a first position, in which they engage the clutch, and a second position, in which they disengage the clutch.

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Claim 4 (Currently Amended). The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein the pinion of the transmission shaft will be engaged with an internal toothed section formed on a left side of a turret housing when the transmission shaft piston moves leftwards, thus allowing power to be passed on to the transmission sleeve as well as the central shaft to actuate the external turret, and the gear of the transmission sleeve will be inserted in[,] and secured with an internal toothed section formed on a right side of the turret housing when the transmission shaft piston moves rightwards, thus allowing power to be passed on to the transmission shaft as well as the external toothed ring to actuate the internal turret.

Claim 5 (Currently Amended). The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein an intermediate shaft is arranged between the transmission sleeve and the central shaft, and both a gear wheel and a pinion are secured on the intermediate shaft, and are respectively engaged with the gear of the transmission sleeve[,] and the gear of the central shaft.

Claim 6 (Currently Amended). The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein a final gear ratio of power transmission to the internal turret through the transmission shaft is equal to that of power transmission to the external turret through the transmission sleeve.

Claim 7 (Currently Amended). The twin disk type tool turret mechanism as claimed in claim 1 or 3, wherein the power source is a stepper motor [instead].

2. The following is an examiner's statement of reasons for allowance: U.S. Pat. No.'s 3,798,721 to Schalles, 4,087,891 to Schering, 4,785,513 to Lee et al., 4,706,351 to Chuang, and 4,051,750 to Berly are representative of the closest prior art of record to the present invention as set forth in independent claims 1-3.

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Re '721, Schalles teaches an indexable tool turret assembly having plural tool turrets 10, 11 (Figure 2), each of which can be considered either the "internal" or "external" turret as claimed. It is noted that Schalles teaches the use of a hydraulic motor 28.

Schalles doesn't teach either of a "servomotor" or "stepper" motor as claimed in independent claims 1 and 3. Additionally, it is noted that Schalles doesn't teach a "rotary sleeve having a plurality of engaging teeth on a middle section thereof" that interacts with both a "transmission shaft" and a "transmission sleeve" in the manner as set forth in limitations 3-4 of both claims 1 and 3 to thereby rotate the internal and external turrets, respectively. Furthermore, re independent claims 2 and 3, Schalles doesn't teach a "central shaft piston" that, when actuated and displaced, causes "the internal and external turrets" to be "left and right displaced simultaneously between a first position, in which they engage the clutch, and a second position, in which they disengage the clutch" as set forth in claims 2-3 (see col. 3, lines 6-30, for example, also Figure 2).

Also, there is no combinable teaching in the prior art of record that would reasonably motivate one having ordinary skill in the art to so modify the teachings of Schalles, and thus, for at least the foregoing reasoning, Schalles does not render obvious the present invention as set forth in independent claims 1-3.

Similarly, Schering, Lee et al., Chuang, and Berly each teach turret devices including both internal and external tool turrets (see Figure 2 of Schering noting turrets 11, 12, see Figure 1 of Lee et al., noting turrets L and D, see Figure 1 of Chuang, noting turrets D1 and D2, and see Figures 3-5 of Berly, noting turrets 23 and 24).

However, likewise, none of Schering, Lee et al., Chuang, nor Berly teach a “rotary sleeve having a plurality of engaging teeth on a middle section thereof” that interacts with both a “transmission shaft” and a “transmission sleeve” in the manner as set forth in limitations 3-4 of both claims 1 and 3 to thereby rotate the internal and external turrets, respectively. Furthermore, re independent claims 2 and 3, none of Schering, Lee et al., Chuang, nor Berly teach a “central shaft piston” that, when actuated and displaced, causes “the internal and external turrets” to be “left and right displaced **simultaneously** between a first position, in which they engage the clutch, and a second position, in which they disengage the clutch” as set forth in claims 2-3.

Also, there is no combinable teaching in the prior art of record that would reasonably motivate one having ordinary skill in the art to so modify the teachings of any of Schering, Lee et al., Chuang, or Berly, and thus, for at least the foregoing reasoning, none of Schering, Lee et al., Chuang, or Berly render obvious the present invention as set forth in independent claims 1-3.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”


Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erica E. Cadugan whose telephone number is (571) 272-4474. The examiner can normally be reached on M-F, 6:30 a.m. to 4:00 p.m., alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer D. Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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